

Table 1. System Parameters for Kepler-4

Parameter	Value	Notes
<i>Transit and orbital parameters</i>		
Orbital period P (d)	3.21346 ± 0.00022	A
Midtransit time E (HJD)	2454956.6127 ± 0.0015	A
Scaled semimajor axis a/R_\star	$6.47^{+0.26}_{-0.28}$	A
Scaled planet radius R_P/R_\star	$0.02470^{+0.00031}_{-0.00030}$	A
Impact parameter $b \equiv a \cos i/R_\star$	$0.022^{+0.234}_{-0.022}$	A
Orbital inclination i (deg)	$89.76^{+0.24}_{-2.05}$	A
Orbital semi-amplitude K (m s^{-1})	$9.3^{+1.1}_{-1.9}$	A,B
Orbital eccentricity e	0 (adopted)	A,B
Center-of-mass velocity γ (m s^{-1})	-1.27 ± 1.1	A,B
<i>Observed stellar parameters</i>		
Effective temperature T_{eff} (K)	5857 ± 120	C
Spectroscopic gravity $\log g$ (cgs)	4.25 ± 0.10	C
Metallicity [Fe/H]	$+0.17 \pm 0.06$	C
Projected rotation $v \sin i$ (km s^{-1})	2.2 ± 1.0	C
Mean radial velocity (km s^{-1})	-61.0 ± 0.10	B
<i>Derived stellar parameters</i>		
Mass $M_\star(M_\odot)$	$1.223^{+0.053}_{-0.091}$	C,D
Radius $R_\star(R_\odot)$	$1.487^{+0.071}_{-0.084}$	C,D
Surface gravity $\log g_\star$ (cgs)	4.17 ± 0.04	C,D
Luminosity $L_\star(L_\odot)$	$2.26^{+0.66}_{-0.48}$	C,D
Absolute V magnitude M_V (mag)	4.00 ± 0.28	D
Age (Gyr)	4.5 ± 1.5	C,D
Distance (pc)	550 ± 80	D
<i>Planetary parameters</i>		
Mass $M_P(M_J)$	0.077 ± 0.012	A,B,C,D
Radius $R_P(R_J$, equatorial)	0.357 ± 0.019	A,B,C,D
Density ρ_P (g cm^{-3})	$1.91^{+0.36}_{-0.47}$	A,B,C,D
Surface gravity $\log g_P$ (cgs)	$3.16^{+0.06}_{-0.10}$	A,B,C,D
Orbital semimajor axis a (AU)	0.0456 ± 0.0009	E
Equilibrium temperature T_{eq} (K)	1650 ± 200	F

Note. —

- A: Based primarily on the photometry.
- B: Based on the photometry and radial velocities.
- C: Based on spectrum analysis (FIES/MOOG or HIRES/SME).
- D: Based on the Yale-Yonsei evolution tracks.
- E: Based on Newton's version of Kepler's Third Law.
- F: Assumes Bond albedo = 0.1 and complete redistribution.